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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,865	01/20/2004	Da-Jung Chen	12386-US-PA	1864
31561	7590	08/22/2005	EXAMINER	
JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE 7 FLOOR-1, NO. 100 ROOSEVELT ROAD, SECTION 2 TAIPEI, 100 TAIWAN			KANG, DONGHEE	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 08/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.		Applicant(s)	
	10/707,865		CHEN ET AL.	
	Examiner		Art Unit	
	Donghee Kang		2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,6-10,12 and 14-21 is/are pending in the application.
- 4a) Of the above claim(s) 19-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4, 6-10, 12, & 14-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 19-21 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Inventions II (Claims 19-21) and I (original claims) are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process, such as forming the conductor layer by using physical vapor deposition.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 19-21 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Objections

2. Claim 18 is objected to because of the following informalities: The phrase "the substrate structure of claim 18 should be - -the substrate structure of claim 17 - -

Appropriate correction is required.

Claim Rejections - 35 USC § 103

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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims **1-2, 4, 8-10, 12 & 14-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagase et al. (US 6,483,185).

Re claims 1 & 9, Nagase et al. teach a chip package structure, comprising (Fig.10C):

A substrate (11) having a lateral surface, a first surface and a second surface, wherein the substrate further has a first metallic layer (73, Fig.9B), a second metallic layer (74) and a conductor (72) with the first metallic layer located on the first surface of the substrate, the second metallic layer located on the second surface of the substrate and the conductor located on the lateral surface of the substrate, and the first metallic layer is electrically connected to the second metallic layer through the conductor, a lead frames (24 & 27), located on the first surface of the substrate, wherein the lead frame is electrically connected to the first metallic layer; a first chip (23), having a first active surface and a first back surface, wherein the first back surface of the first chip is bonded either onto the surface of the surface of the lead frame or onto the first surface, and the first chip has a plurality of first bonding pads on the first active surface; a plurality of the bonding wires (23), connecting the first bonding pads of the first chip to the lead frame; a heat sink (27), located on the second surface and electrically connected to the second metallic layer; and a package material (29), encapsulating the first chip, the first bonding

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wires and a portion of the lead frame, the lead frame having another portion exposed to the ambient. See also Col.14, line 23 - Col.16, line 16.

Nagase et al. do not explicitly teach the thickness of the conductor.

It is an obvious matter of routine experimentation to find the optimal thickness ranges. Generally, difference in thickness will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such thickness is critical.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the thickness of the dielectric layer, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Re claims 2 & 10, Nagase et al. teach the conductor comprises a copper.

Re claims 4 & 12, Nagase et al. teach the conductor comprises a conductive adhesive.

Re claims 8 & 14, Nagase et al. teach the substrate is made of ceramic material.

Re claims 15-18, Nagase et al. teach the conductor is composite layer comprising at least two metallic layers (113 & 114, Fig.14B), wherein each of the metallic layer comprises a titanium layer or a copper layer.

5. Claims **6-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagase et al. in view of Shinohara et al. (US 6,787,900).

Nagase et al. does not teach the chip package structure further comprising a second chip and a plurality of second bonding wires. Shinohara et al. teach in Fig.1 the chip package structure comprising a first and second chip (5) and a plurality of wires (7) connecting the first chip to the second chip. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have more than one chip in the chip package structure in order to operate properly the semiconductor device.

Response to Arguments

6. Applicant's arguments filed 7-13-05 have been fully considered but they are not persuasive.

Applicant argues that Nagase fails to teach or suggest that conductor has a thickness ranging from 0.1 μm to 5 μm . Nagase also discloses the substrate 11 has a thickness of 0.635 mm. Therefore, the conductor formed on the lateral surface of substrate has a thickness about 0.635 mm. This is not convincing.

The thickness d of the conductor 217 is measured from left to right (See Fig.3 of application) but not from bottom to top. Thus the thickness of the conductor 72 is not same as the thickness of the substrate. Generally, difference in thickness will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such thickness is critical.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the thickness of the conductor layer, since it has been held that where the general conditions of a claim are disclosed in the prior art,

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discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghee Kang whose telephone number is 571-272-1656. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Loke can be reached on 571-272-1657. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Donghee Kang, Ph.D.
Primary Examiner
Art Unit 2811

dhk